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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/459,062	12/10/99	TAO	T 17634-00034U

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TOWNSEND AND TOWNSEND AND CREW
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EXAMINER	
BROWN, S	
ART UNIT	PAPER NUMBER
1648	11

DATE MAILED: 08/14/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/459,062	Applicant(s) TAO ET AL.	
	Examiner Stacy S Brown	Art Unit 1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58* is/are pending in the application.

4a) Of the above claim(s) *31-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30 and 46-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-58* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4,5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to **Group Art Unit 1648. Your application has been reassigned to examiner Stacy Brown.**

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-30, 46-55 and 58, drawn to a chimeric PIV, classified in class 424, subclass 211.1.

II. Claims 31-45, drawn to a method for stimulating the immune system, classified in class 424, subclass 93.2.

III. Claims 56-57, drawn to a method for producing a chimeric PIV, classified in class 435, subclass 69.1.

The inventions are distinct, each from the other for the following reasons:

a) Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of using such as an assay for measuring antibody titer.

b) Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as

claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process, such as isolating and ligating the nucleic acids from natural sources.

c) Inventions II and III are unrelated because the method of the methods require different reagents and method steps, and have different functions, outcomes, effects and modes of operation. Invention II stimulates the immune system, while invention III produces a chimeric virus.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the literature search for one group is not required or co-extensive for any other group, restriction for examination purposes as indicated is proper.

During a telephone conversation with Jeffrey King on July 31, 2001 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-30 and 46-55. Affirmation of this election must be made by applicant in replying to this Office action. Claims 31-45 and 56-57 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

3. The drawings are objected to by the Draftsperson, see PTO Form 948.

Specification

4. The disclosure is objected to because of the following informalities: page 113 is missing a printed page number. Amino acid positions throughout the specification must be referred to by a SEQ ID NO, for example, see page 48. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19, 26-27, 29-30 and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) Claims 19, 26-27 and 45 recite amino acids positions that must be referred to by a SEQ ID NO.

b) Claims 29-30 recite "The chimeric PIV of claim 1 which is a virus", and "The chimeric PIV of claim 1 which is a subviral particle", respectively. It is not clear why claim 29 needs to specify that the chimeric parainfluenza virus of claim 1 is a virus, as in claim 29. It is also not clear how the chimeric parainfluenza virus of claim 1 can also be a subviral particle, as

in claim 30. A PIV is by definition a virus, and therefore it appears that claim 29 is not necessary. Appropriate clarification is required.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-10, 12, 19-30, 46-50, 53 and 54 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8-12, 15-16, 18-22, 24-26, 34-39 and 40 of copending Application No. 09/458,813. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of 09/458,813 are drawn to a species of the instant claims, HPIV3 JS, rendering the instant claims' genus, HPIV, obvious. The limitations of the claims are identical in both applications. One would have been motivated to substitute the species for the genus and would have had a reasonable expectation of success given the well-known species, HPIV3 JS, in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-10, 12, 19-23, 25, 28-29, 46-50 and 53-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Belshe et al (US Patent 5,869,036).

The claims are drawn to an isolated infectious chimeric PIV comprising N protein, P protein, L protein, and a human PIV vector genome or antigenome that is modified to encode a chimeric glycoprotein incorporating one or more heterologous antigenic domains, fragments, or epitopes of a second, antigenically distinct HPIV. The claims encompass different combinations of HPIV1, 2 and 3 domains, such as HN and F proteins. RSV and BIV are also incorporated as a heterologous gene segment into the vector. Also claimed are nucleic acids encoding the chimeric PIV and immunogenic compositions comprising the chimeric PIV.

Belshe et al teach an isolated cp-45 hybrid virus (a derivative of HPIV-3 JS) which is suitable for use as a vaccine in humans and animals comprising nucleic acid encoding nucleocapsid protein, phosphoprotein, at least one surface antigen of a target virus, and large polymerase protein, see columns 2-3. The target virus must have enveloped and have one or more surface antigens or surface glycoproteins (HN and F are surface glycoproteins), such as HPIV-1, HPIV-2 and RSV. Belshe et al disclose that the gene sequence which encodes the surface glycoproteins of the target virus may be substituted for the corresponding sequence in the

cp45 genome which codes for the HN and F proteins, to result in a chimeric genome, see columns 8-9. Bovine RSV and cattle HPIV- are also included within the scope of Belshe et al. Attenuating mutations are introduced into the L segment as well as other proteins, see column 5, lines 42-67 and column 6, lines 1-3. Belshe et al disclose the use of their chimeric PIV in a vaccine, or immunogenic composition, comprising a physiologically acceptable carrier, see column 2, lines 32-33. Therefore, the claimed invention is anticipated by Belshe et al.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-30 and 46-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belshe et al in view of Collins et al (US Patent 6,264,957) and Klein et al (WO93/14207).

The claims are drawn to an isolated infectious chimeric PIV comprising N protein, P protein, L protein, and a human PIV vector genome or antigenome that is modified to encode a chimeric glycoprotein incorporating one or more heterologous antigenic domains, fragments, or epitopes of a second, antigenically distinct HPIV. The teachings of Belshe et al are described above; additionally Belshe et al teach attenuating mutations in the HPIV3 L protein wherein leucine is substituted for phenylalanine, see claim 1. **Belshe et al differ from the claimed invention by not teaching rPIV3-2TM modified to incorporate attenuating mutations, nor wherein the glycoproteins are fused to a cytoplasmic tail region, nor where the heterologous, non-coding non-sense polynucleotide genes are added, nor an attenuating mutation at position 456 of the HPIV3 L protein, nor wherein the chimeric PIV is a subviral particle, nor wherein the immunogenic composition further comprises a second chimeric PIV.**

Collins et al teach RSV vaccines comprising subviral particles. One would have been motivated to modify the chimeric PIV of Belshe et al by substituting subviral particles because it was known in the art at the time of the invention that subviral particles are effective in vaccine compositions as taught by Collins et al . Klein teaches a multimeric hybrid gene, comprising RSV (G or F protein) and HPIV (F or HN protein), and combinations of these proteins such as F proteins from both PIV3 and RSV, see pages 36-37. One would also know where to add the heterologous gene segment given the well-known art of recombination and would have been **motivated to incorporate the segment in such a way as to ensure its expression and stability**. Belshe et teach the method of incorporating the heterologous (target gene clone) segment by ligation into the PIV clone. One of ordinary skill would also have known where and

how to make attenuating mutations; lacking evidence to the contrary, the mutation at position 456 has not been given patentable weight. Applicant is invited to point to the significance of a mutation of position 456. One would have had a reasonable expectation of success given the well known practices of foreign gene expression. Therefore, the invention would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

9. No claim is allowed.

Papers relating to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 located in Crystal Mall 1. The Fax number for Art Unit 1648 is (703) 308-4426. All Group 1600 Fax machines will be available to receive transmissions 24 hrs/day, 7 days/wk. Please note that the faxing of such papers must conform with the Notice published in the Official Gazette, 1096 OG 30, (November 15, 1989).

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stacy S. Brown, whose telephone number is (703) 308-2361. The Examiner can normally be reached on Monday through Friday from 7:30 AM-4:00 PM, (EST). If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, James C. Housel, can be reached at (703) 308-4027. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Stacy S. Brown
August 13, 2001

HANKYEL T. PARK, PH.D
PRIMARY EXAMINER